

PCT

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

From the INTERNATIONAL BUREAU

To:

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26

Date of mailing (day/month/year)  
08 February 2007 (08.02.2007)

Applicant's or agent's file reference  
FIN 561 PCT

IMPORTANT NOTIFICATION

International application No.  
PCT/DE2005/000215

International filing date (day/month/year)  
09 February 2005 (09.02.2005)

Applicant

INFINEON TECHNOLOGIES AG et al

1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

KR

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Ellen Moyse

**TRANSLATION**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>FIN 561 PCT</b>	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/DE2005/000215</b>	International filing date (day/month/year) <b>09.02.2005</b>	Priority date (day/month/year) <b>18.02.2004</b>
International Patent Classification (IPC) or national classification and IPC <b>H01L25/065</b>		
Applicant <b>INFINEON TECHNOLOGIES AG</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of \_\_\_\_\_ sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

- a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:
  - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
  - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))

\_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/DE2005/000215

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-16 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 3, 5-9, 11-16 as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1.10 received by this Authority on 18.01.2006 with letter of 16.01.2006
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/3-3/3 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/DE2005/000215

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1, 3, 5-16</u>	YES
	Claims	<u>-</u>	NO
Inventive step (IS)	Claims	<u>1, 3, 5-16</u>	YES
	Claims	<u>-</u>	NO
Industrial applicability (IA)	Claims	<u>1, 3, 5-16</u>	YES
	Claims	<u></u>	NO

## 2. Citations and explanations (Rule 70.7)

1 The originally filed independent claims 1 and 10 have been replaced by the newly proposed independent claims 1 and 10; the originally filed dependent claims 2 and 4 are cancelled.

2 Reference is made to the following documents:

D1: US 2003/218191 A1 (NORDAL PER-ERIK ET AL) 27 November 2003

D2: US 2003/132527 A1 (COOMER BOYD L) 17 July 2003

D3: US 2003/071341 A1 (JEUNG BOON SUAN ET AL) 17 April 2003

D4: US 2003/006493 A1 (SHIMOISHIZAKA NOZOMI ET AL) 9 January 2003

D5: US-A-5 637 536 (VAL ET AL) 10 June 1997

D6: US 2003/175411 A1 (KODAS TOIVO T ET AL) 18 September 2003

3.1 Document D1 shows the stacking of layers of electronic components, wherein contact surfaces are respectively adjacent to the edge of a layer. These contact surfaces are then connected to one another by conductor tracks which run over edges of layers that are offset with respect to one another. The subject matter of claim 1 differs from this in that the layers are not chips but insulating layers on which circuits are arranged (see figure 50).

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

Document D2 shows a chip stack but, in view of the form of the connecting lines 320, 410 and 420 between the individual levels of the stack, obviously no contact surfaces are respectively led up to the edges of the chips. It is also the case with the chip stacks shown in documents D3 and D4 that the contact surfaces are not arranged at the edges but within the areas of the chips. The subject matter of claim 1 is therefore novel.

3.2 The arrangement of the contact surfaces at the edge of the chips makes it possible for chips to be stacked in the case where a larger chip is to be stacked over a smaller one. Such stacking is consequently more advantageous than the stacking shown in the present documents. The subject matter of claim 1 is therefore inventive.

4.1 Document D3 is considered to be the prior art closest to the method claim 10. The subject matter of claim 10 differs from D3 in that the contact surfaces do not extend up to the chip edges; furthermore, the conductor tracks are produced from metal (figure 33 of D3) instead of from plastic filled with nanoparticles that is subsequently structured. The subject matter of claim 10 is therefore novel.

4.2 D5 discloses dipping the stack in an unspecified conducting fluid, and a person skilled knows from D6 that there are immersion baths of polymer filled with nanoparticles. However, a person skilled in the art would not combine these two documents with D3, since he can use more simple contacting arrangements with the known stacks, where a smaller chip is in each case placed on a larger one. The

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

method according to claim 10 is therefore not suggested by D3. Furthermore, it has an advantage over D3 that is not obvious to a person skilled in the art: it allows structuring into cavities with the formation of very thin, highly conductive connections, in particular also whenever the stack comprises chips of different sizes in any desired sequence. The subject matter of claim 10 is therefore inventive.

- 5 As claims that are respectively dependent on the newly filed claims 1 and 10, the originally filed claims 3, 5-9 and 11-16 are likewise novel and inventive.